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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,177	11/02/2005	Takahiro Hatanaka	084335-0193	7640
22428 7590 03/31/2008 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
DANG, IAN D				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/531,177

Applicant(s)

HATANAKA ET AL.

Examiner

IAN DANG

Art Unit

1647

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-9, 11 and 12 is/are pending in the application.
4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 11 and 12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Status of Application, Amendments and/or Claims

The amendment of 22 January 2008 has been entered in full. Claims 1-5 and 10 have been cancelled and claims 6-9 have been withdrawn to a non-elected invention. Claims 11 and 12 have been amended.

Claims 11 and 12 are pending and under examination.

Claim Objections

Applicant's amendments made to claim 10 filed on 01/22/2008 have overcome the objections of claims 1, 3-5, and 10. The objections of claims 1, 3-5, and 10 have been withdrawn.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

Claim Rejections - 35 USC § 112 (Written Description)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11 and 12 are rejected under 35 U.S.C. 112, First paragraph as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Although Applicant has overcome the rejection of claim 10 under 35 USC 112, First paragraph (Written Description) by cancelling claim 10, claims 11 and 12 are now rejected under 35 USC 112, first paragraph, in view of Applicants amendments.

At page 3 of the response, Applicants argue that the cancellation of claim 10 is rendering the rejection moot.

Applicant's claim amendments have been fully considered but are not found persuasive. Although Applicants have overcome the rejection of claim 10 under 35 USC 112, First paragraph (Written Description) by cancelling claim 10, the amendments made to claims 11 do not satisfy the written description requirement because Applicants have not provided any identifying structural characteristics for the amino acid transporter B⁰⁺ (ATB⁰⁺) inhibitory substances that include L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds of the instant claims.

To provide adequate written description and evidence of possession of claimed genus, the specification must provide efficient distinguishing identifying characteristics of the genus.

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The factors to be considered include disclosure of complete or partial structure/function correlation, and other identifying characteristics. Accordingly, in the absence of sufficient recitation of distinguishing structural/physical and identifying characteristics, the specification does not provide adequate written description of the claimed genus.

In addition, although Applicant discloses the functional activity the amino acid transporter B⁰⁺ (ATB⁰⁺), Applicant has not provided any structural characteristics for the claimed L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds. While the specification teaches the amino acid transporter ATB⁰⁺ inhibitory substances of this invention are not particularly limited, as long as they suppress cell growth by inhibiting transport mediated by the amino acid transporter ATB⁰⁺, or by binding to the amino acid transporter ATB⁰⁺ to cause cytotoxicity (page 4, lines 23-26), the claim and the specification fail to disclose that the structure of the L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds as active ingredient for the cell growth inhibitor for the active ingredient of the amino acid transporter B⁰⁺ (ATB⁰⁺) inhibitory substance.

Therefore, Applicant has not satisfied the requirement for written description because the claimed L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds encompass a genus of inhibitory substances whose structures are not described. The specification does not provide any description of the special features, which are critical to function of the genus claimed. Furthermore, the specification does not provide compensatory structural or correlative teachings sufficient to one of skill in the art to isolate and identify the amino acid transporter B⁰⁺ (ATB) inhibitory substance active ingredient encompassed by the claims.

Finally, no structural identifying characteristics or properties of the instant amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient such that one of skill would be able to predictably identify the encompassed variant chemical entities recited for the amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that includes L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds of the instant claims. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, applicant was not in possession of the claimed genus and the written description requirement is not satisfied.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatanaka et al. (2002, Journal of Pharmacy and Pharmacology, Volume 54, pages 549-554, published April 2002).

The claimed invention is drawn to a cell growth inhibitor comprising an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell, wherein the ATB^{0,+} inhibitory substance is selected from the group consisting of L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds thereof. In addition, the

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cell growth inhibitor is for cancer cells that include colon cancer cell, pancreatic cancer cell, or breast cancer cell.

Applicants have overcome the rejection of claims 1 and 11-12 under 35 U.S.C. 102(b) as being anticipated by Sloan et al., (1999, The Journal of Biological Chemistry, Volume 274, Issue 34, pages 23740-23745, cited in the IDS filed 11/02/2005) by amending claim 11. However, claims 11 and 12 are now rejected under 35 USC 102(b) as being anticipated by Hatanaka et al. (2002, Journal of Pharmacy and Pharmacology, Volume 54, pages 549-554, published April 2002) in view of the amendments made to claim 11.

Although Applicants have overcome the rejections of claims 1-5 under 35 USC 102(b) by cancelling claims 1-5, the rejection under 35 USC 102(b) is maintained for claims 11 and 12. The amendments made to claim 11 are now anticipated by Hatanaka et al. (2002, Journal of Pharmacy and Pharmacology, Volume 54, pages 549-554, published April 2002) because L-Phenylalanine (an L amino acid) inhibits the Na^+ -dependent uptake of the system $\text{B}^{\text{0,+}}$ or amino acid transporter $\text{ATB}^{\text{0,+}}$ (page 552, right column, 2nd paragraph; page 553, left column 1st paragraph, and Table 1).

Although the reference is silent regarding the suppression of a cancer cell, such as a colon cancer cell, pancreatic cancer cell, or breast cancer, the teachings of the reference would inherently result in this outcome because a compound and all of its properties are inseparable; they are one and the same thing (see *In re Papesch*, CCPA 137 USPQ 43; *In re Swinehart and Sfiligoj*, 169 USPQ 226 (CCPA 1971)). For instance, Kitaguchi et al. (US Patent 5,436,221, filed February 13, 1992; Issued July 25, 1995) teach that pharmaceutical compositions made of L-phenylalanine derivatives are useful for inhibiting tumor metastasis (see abstract). Please note that the reference is not being used in the rejection but it is being used to illustrate the inherent property of the phenylalanine to treat cancer.

These teachings meet the limitations of claims 11 and 12.

New grounds of rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sloan et al., (1999, The Journal of Biological Chemistry, Volume 274, Issue 34, pages 23740-23745, cited in the IDS filed 11/02/2005).

Sloan et al. teach that the growth inhibitor 2-aminobicyclo-[2.2.1]-heptane-2-carboxylic acid (BCH) inhibits the amino acid transporter ATB⁰⁺ (page 23740, Abstract). This compound has broadly interpreted as derivative compounds recited in claim 11, since Applicants have not provided any definition for "derivative compounds. Although the reference is silent regarding the suppression of a cancer cell, such as a colon cancer cell, pancreatic cancer cell, or breast cancer, the teachings of the reference would inherently result in this outcome because a compound and all of its properties are inseparable; they are one and the same thing (see *In re Papesch*, CCPA 137 USPQ 43; *In re Swinehart and Sfiligoj*, 169 USPQ 226 (CCPA 1971)). For instance, Singh et al. (1996, Cancer Investigation, Volume 14, Issue 1, pages 6-18) teach that the inhibitor 2-amino-2-norborane carboxylic acid (BCH) (a synonym for 2-aminobicyclo-[2.2.1]-

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heptane-2-carboxylic acid disclosed by Sigma, see Exhibit A) decreases tumor cell invasion of the basement membrane as illustrated by the decreases of the invasiveness activity of human adenocarcinoma cells in Amgel assay (abstract). Please note that the reference is not being used in the rejection but it is being used to illustrate the inherent property of the compound to treat cancer.

These teachings meet the limitations of claims 11 and 12.

Claim Rejections - 35 USC § 112 (Enablement)

Claims 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a cell growth inhibitor comprising L-2 phenylglycine as an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell does not reasonably provide enablement for a cell growth inhibitor comprising an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell, wherein the ATB ATB^{0,+} inhibitory substance is selected from the group consisting of L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims.

In In re Wands, 8USPQ2d, 1400 (CAFC 1988) page 1404, the factors to be considered in determining whether a disclosure would require undue experimentation include: (1) Nature of the invention, (2) the state of the prior art, (3) the predictability or lack thereof in the art, (4) the

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amount of direction or guidance present, (5) the presence or absence of working examples, (6) the breadth of the claims, (7) the quantity of experimentation needed, (8) relative skill of those in the art.

Nature of the invention and breadth of the claims

The claimed invention is drawn to a cell growth inhibitor comprising an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell, wherein the ATB^{0,+} inhibitory substance is selected from the group consisting of L-amino acids, NOS inhibitors, phenylglycine derivatives, carnitines, D-amino acids, and amino acid-based prodrugs, or the group consisting of derivative compounds thereof. In addition, the cell growth inhibitor is for cancer cells that include colon cancer cell, pancreatic cancer cell, or breast cancer cell.

The invention has excessive breadth because the recitation of claim 11 encompasses a large number of ATB^{0,+} inhibitory substances as active ingredients that suppress growth of a cancer cell. For instance, the specification teaches that the amino acid transporter ATB^{0,+} inhibitory substances of this invention are not particularly limited, as long as they suppress cell growth by inhibiting transport mediated by the amino acid transporter ATB^{0,+}, or by binding to the amino acid transporter ATB^{0,+} to cause cytotoxicity. Substances that inhibit transport mediated by the amino acid transporter ATB^{0,+} include, for example, substances that bind to the amino acid transporter ATB^{0,+} to inhibit its transport function, and substances that suppress its expression. Substances that bind to the amino acid transporter ATB^{0,+} to inhibit its transport function are preferred (page 4, lines 23-29).

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The amount of direction or guidance present

Applicants' disclosure is limited the *in vitro* studies for cell growth suppression effect of L-2-phenylglycine on human cell lines. However, the specification does not provide guidance or direction regarding the structural identifying characteristics for the an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell. For instance, there is no guidance regarding the structure of L-amino acids, D-amino acids, or derivative compounds.

Working Examples

Although Applicants have provided an example for the *in vitro* cell growth suppression effect of L-2-phenylglycine human colon cancer cell lines (SW60 and HT29) and the breast cancer cell line (MCF-7) (Example 2, page 16, and Figure 2), the specification does not provide any methods or working examples for other amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substances as active ingredients that suppress growth of a cancer cell.

The quantity of experimentation needed

Without sufficient disclosure in the specification, it would require undue experimentation for one of skill in the art to be able to make a cell growth inhibitor comprising an amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance as an active ingredient that suppresses growth of a cancer cell because Applicant has not provided any structural characteristics regarding the ATB^{0,+} inhibitory as an active ingredient. In addition, it would require undue experimentation to practice the invention commensurate in scope with the claims because, the claims are broadly drawn to a large number of ATB^{0,+} inhibitory substances as active ingredients that suppress growth of a cancer cell without providing any structural identifying characteristics.

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Therefore, due to the large quantity of experimentation necessary to determine the amino acid transporter B^{0,+} (ATB^{0,+}) inhibitory substance, the lack of direction/guidance presented in the specification regarding the same, the absence of working examples directed to the same, the complex nature of the invention, undue experimentation would be required of the skilled artisan to make the claimed invention in its full scope.

Conclusion

No claim is allowed.

Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IAN DANG whose telephone number is (571)272-5014. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manjunath Rao can be reached on (571) 272-0939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ian Dang
Patent Examiner
Art Unit 1647
March 26, 2008

/Robert Landsman/
Primary Examiner, Art Unit 1647